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STUDENT ESSAY

TACTICAL AND FIXED SIGNAL - LET'S GET IT TOGETHER

BY

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6 MAY 1987

US ARMY WAR COLLEGE, CARLISLE BARRACKS, PENNSYLVANIA

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There are basically two 'signal corps'; the traditional Ft Gordon Signal School-trained, TO&E signal corps whose tactical units are usually organic to combat organizations, and the Ft Huachuca US Army Information Systems Command, TDA, fixed-signal corps whose organizations are assigned in support of garrison or sustaining base operations in the continental United States and overseas. The two 'signal corps' provide essential services to their Army customers, that of quality communications and automation support. 'Both' signal corps are thus in a tough service business where the customer environment changes rapidly, prima-

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TACTICAL AND FIXED SIGNAL - LET'S GET IT TOGETHER

An Individual Essay

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Abstract

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TACTICAL AND FIXED SIGNAL -
LET'S GET IT TOGETHER

My previous assignment as Commander, 102d Signal Battalion,
5th Signal Command, US Army Information Systems Command,
was one of the best times of my career in terms of professional
growth, ability to influence soldiers and young officers, and in
performing a worthwhile job for the Army. As I look back on my
assignment, however, I'm struck by a slightly different perspective,
'retroactive insights' if you will, on how the signal community
operates. Some of what I see is good and some is not so good. I
believe there are areas we can shore-up through simple actions to
make the signal community stronger, thus doing a better job by
providing even better services to our customers. Let me back-up
and explain where I'm coming from.

The mission of the 102d Signal Battalion, headquartered in
Frankfurt, Germany, is to provide sustaining base communications

and automation support to the V US Corps or any unit in the V Corps area. The mission is a very demanding 24 hours-a-day, 365 days-a-year job. The battalion is considered a 'TDA battalion' although its authorization documents include a TO&E (Tables of Equipment) 'superstructure' for the basic command and control elements, such as commanders, sergeant major, first sergeants or other primary officer and enlisted positions, and augmented by a sizable TDA (Tables of Distribution and Allowances). Roughly speaking, the battalion consists of about 400 US military personnel and 300 US, German or third country national personnel. Although partitioned into company or detachment size units, the battalion is actually considered to be made-up of communications facilities or sites distributed throughout the V Corps area

Besides providing day-to-day signal services to its V Corps customers, the battalion is a participant in every exercise involving V Corps or any other unit in the V Corps area. A particularly busy time occurs during the annual REFORGER (REturn of FORces to GERmany) exercises where in-country and visiting units use telephone, telecommunications (telegraph), and computer center

services. Due to unusually heavy demands placed on the logistics systems during exercises, the data processing facilities are burdened to keep pace with the flow of information through the many supply and budgetary systems.

A major communications modernization program called the European Telephone System, or ETS, is well underway in Europe to upgrade the antiquated telephone switches and operator service areas from 1940's technology to newer automated switches. During my tenure, 22 battalion switching facilities were modernized, while the technicians and US soldiers simultaneously provided continuous, uninterrupted, day-to-day telephone services to their military community customers.

There were other modernization efforts underway, for example the fielding of STU-II secure telephones to replace the older AUTOSEVOCOM telephones, but no modernization project was as significant and potentially disrupting as the telephone facility upgrades.

Other changes were taking place. There was a major reorganization within 5th Signal Command resulting in battalion and unit boundary realignments and the redefinition of unit missions. A new TO&E 'computer on wheels' unit was incorporated into the battalion. Six radio relay facilities were transferred from the battalion to government-owned, contractor-operated control. At one point, the 102d Signal Battalion was impacted upon by 11 different TO&E and TDAs! And on top of all this, the Information Systems Command had recently accepted the new information mission area responsibilities; audio-visual, records management, printing and publications, automation and information management resulting in a vast new way of doing business.

The purpose of explaining all this is not to toot the horn of the 102d Signal Battalion - other Information Systems Command battalions were doing the same thing. The purpose is to show a basis for and to lay the groundwork for my constructive criticisms of the signal community.

There are three broad areas where I feel the signal community

could do better: keeping its people current in signal matters, selling

its service product to its customers, and enforcing cohesiveness, a

spirit of teamwork, among its own members.

These are not simple issues and I'm sure leaders have been

grappling with solutions for many years. I must join the foray

and offer my own observations and recommendations. The

ultimate goal, of course, is for a strong signal community, one that

understands its role in the Army as well the role each major

subset of signal systems plays.

The signal community is in the business of providing a service;

we may be the only business in town but that should not prevent

us from being professional and doing the best job we can. The lack

of competition for our services cannot permit us to become

lackadaisical or complacent. We must strive to ensure our signal

people are kept adequately informed so that we can best sell our

product. It is my thesis that a product *sold* to a customer, or,

from the customer's point of view, *bought* by the perspective user

as something he wants, is a better product and therefore, the

transition from old to new is easier and user acceptance is achieved.

These are potentially turbulent times for the whole signal community, from the tactical, organic signal units whose soldiers are trained at the Ft Gordon Signal Center and School to the fixed, sustaining base signal units of Ft Huachuca's US Army Information Systems Command Missions are evolving, force structure is changing, and new equipment is being fielded Now, more than ever, signal credibility is at stake. As the song says, "For united we stand, divided we fall ...". I don't feel there is any danger of falling but I do feel there is glory in standing united and the obvious outcome is success for the signal corps, success for the US Army

First of all is the issue of terminology itself. The Signal Corps revels in jargon, in seemingly complicated lingo that we ourselves do not understand all that well. For example, there are a plethora of 'C-terms' which are bandied about in written literature or in upbeat conversations and which generally turn our readers

or listeners off, C2 (Command and Control), C3 (Command, Control and Communications), C3I (Command, Control, Communications and Intelligence), or C4 (Command, Control, Communications and Computers) But there are other more difficult acronyms : ACCS and AC2MP, VIABLE, ASIMS, STARNET and SIGMA STAR; TRI-TAC, MSE, SINCGARS, PLRS, TACCS, ULCS; bits, bytes, packets; AM, HF, FM, UHF and SHF, Hz, MHz, GHz, DCA, DCS, ISC, ACSIM (now DISC40), BCR-I, BCR-II, BAIR, C2SPR-I or II; Tier-I, Tier-II, Tier-III; on and on *ad infinitum*! We have muddled-up the English language in a misguided sense of conversation efficiency. It is difficult enough to understand ourselves much less for the uninitiated to follow our trains of thought

We are barely better with everyday words, like 'signal' and 'communications', or 'data' and 'information'. Ten signal officers, when asked to define these seemingly simple terms, will provide ten different meanings. (In this paper, 'signal' refers generically to both communications- and information-related concepts, such as the 'signal community') There are those who would like the word

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'information' to replace the word 'communications', such as when speaking of 'information systems' rather than 'communications systems'. I prefer, however, to think of them as two distinctly different terms where 'communications' refers to the conduits or pipelines through which 'information' (or 'data') passes.

It is outside the scope of this paper to define terms. Instead, these examples are used to illustrate a point: the signal community needs to tighten-up its language. We are imprecise in our terminology and our acceptance of sloppiness creates misunderstandings among ourselves as well as with our users. How good it would be to have **an easy-to-use glossary of common signal terms** that all personnel in the signal community could refer to as necessary.

But our lack of knowledge goes deeper than just terminology, we do not understand nor accept what it is the *other signal guys* do: tactical signal lacks appreciation of fixed signal; those with a Ft Huachuca orientation often forget the mission of the Ft Gordon soldiers; those at echelons above corps (EAC) consider themselves

different from those at corps and below (CAB); very few realize

that Army systems usually are but a subset of an umbrella of

defense or even national systems. The corporate _we_ must realize

that we're all in this together and that our current responsibilities

concern but a tiny little piece of the BIG PICTURE. The whole

picture puzzle works only when each of its pieces are themselves

in working order and in harmony with their neighboring pieces.

We also disagree on the definition of the word 'system'. To a

communications engineer, a system gets data from one place to

another within the parameters of rigid technical characteristics. To

a communications systems engineer, the communications pipelines

are looked at from the end user to the end user, or perhaps from

a major piece of equipment terminating a Defense Communications

System (DCS) pipeline to its mate at the distant end. To a young

signal officer, the system is from the boss to the first radio. From

the user's perspective, a system has got to work, no matter what

it takes or how it's done.

Thus, a system is different things to different people depending

upon their perspective, and we in the signal community must acknowledge and deal effectively with those differences. It would be much better if we agreed among ourselves on a common definition for use with our customers.

Once a definition of 'systems' is accepted, we can tackle several variations on a theme: user functional or vertical systems; sustaining base, strategic, and tactical systems; equipment systems. None of these are very difficult *conceptually* but the broad concepts ought be understood by one and by all. Being in a service business, we have pledged to support user functional systems, given we have a good idea what the user wants. The building blocks of communications systems are nested and all signal systems work together to produce a final system product.

There is a wide variety of equipments used through-out the signal community at tactical, strategic and sustaining base levels which encompass both communications and computer hardware. This vast array of electronic boxes is confusing enough for someone 'in the know' and I'm sure our young signal officers and civilians

are even more dazed. There have been innumerable times on-the-job when a ready reference would have been useful in planning for exercises or for day-to-day customer support. A **handy, ready reference on communications-electronics hardware and computers**, both those currently in the inventory and some major future procurements, would be an invaluable and much-used resource. The reference would contain pictures, where possible, along with short descriptions of major equipment characteristics and other compatible hardware.

Once upon a time, the Signal School at Ft Gordon distributed a small reference book similar to what I have described above, but that was in the early 1970s. We students found the book a godsend in trying to formulate in our own minds equipment we've never actually seen. In my later assignments, I often wished I had an up-to-date version of the same book to help me answer tough questions and to do my job better.

I propose, therefore, that **the Commander, Ft Gordon Signal Center and School and the Commander, US Army**

Information Systems Command, agree to sponsor a joint venture to publish a **Handbook of Signal Terms, Systems and Equipment** for distribution to basic signal course students, advance signal course students, unit communications-electronics officers (CESOs), Directors of Information Management (DOIMs), and to battalion and brigade signal commanders in the field. The Handbook would become a bible for US Army signal personnel, whether from Ft Gordon or Ft Huachuca, tactical or fixed, military or civilian, EAC or CAB or sustaining base, and would help to insure a common understanding of systems, equipment, terminology and future direction of signal endeavors. **We can't start selling ourselves and our product until we understand what we do and how we fit into the overall scheme of things.**

We demand standardization among the Army users - we must set the example and demand standardization among ourselves.

There is much more to the idea of getting ourselves smart. Our business is not only highly technical but is increasingly challenging

as the days go by. The half-life of knowledge is down to just a couple of years while our field is steadily expanding in scope. Therefore, it is imperative we act aggressively to keep our signal personnel abreast of latest developments, new equipment, yet-to-be fielded systems, current studies, or recent techniques.

Two major efforts are underway right now which have Army-wide impact; the fielding of Mobile Subscriber Equipment, MSE, to corps and division signal units, and the emergence of the Information Mission Area, IMA, throughout the tactical and non-tactical Army. A third hot topic of conversation among our combat arms friends is SINCGARs (SINgle Channel Ground Air Radio) and there is understandably much curiosity as to when SINCGARS will finally be fielded and how it will work. We in the signal business lose credibility when we can't give sound answers to simple , yet probing questions, such as: "When will we get SINCGARS"? "How does MSE work"? "What does information mission area, IMA, mean"? Although mechanisms do exist for wide and rapid dissemination of information, those avenues are not used to their fullest potential and as a result, many of our own signal

personnel are not even conversationally knowledgeable of MSE, IMA or SINCGARS, much less the myriad of other projects currently underway.

There are currently three available signal publications, each with widely varying audiences: The Army Communicator, a journal published once a quarter at Ft Gordon; Accent, a monthly newspaper published at Ft Huachuca; and Signal, a magazine published monthly by the Armed Forces Communications and Electronics Association (AFCEA). Each publication caters generally to its target audience but none is appropriate for an all-encompassing treatment of communications and information. The Communicator comes closest to covering a variety of signal topics but doesn't meet the needs of signal personnel across the signal spectrum from tactical to strategic to sustaining base or including both military and civilians. Accent has addressed tactical issues as they relate to the Information Systems Command EAC signal brigades, but predominantly from a public relations point of view. Signal magazine is designed for military officers and corporate sponsors in the communications or electronics industry and is entirely

inappropriate for a general Army civilian and military audience at the implementation level; it is not a forum for sharing leadership views or for trying-out ideas on each other.

So, looking at the whole communications-information community and considering all its many facets, I find we are not meeting the needs of all its members, either in terms of dissemination of much-needed information downwards and horizontally or in terms of providing a forum for sharing experiences, voicing opinions, or risking new 'in-house' concepts in public. **The signal community has no professional journal.** John Marston, in his article "Hallmarks of a Profession" states that

> Practitioners exchange information and update their knowledge through journals and meetings. Sharing information is a characteristic of professions: hidden methods and trade secrets are considered unprofessional In order to become competent, the professional must continue to grow. [2]

Learning doesn't stop when a student departs from the 'schoolhouse'. In fact, quite the opposite happens; real-world experience builds upon the basic concepts learned in the classroom

and actual learning takes place.

The continuing different publications points out the continuing riff in the signal community, Ft Gordon versus Ft Huachuca. More must be done to pull the two headquarters together on a conceptual basis and to pull their subordinate organizations and personnel together in a 'one signal' mentality. Tactical signal needs fixed signal; just consider the major tactical-to-fixed interface points at Tango in Korea or at the designated AUTOVON switches in Europe. Fixed signal needs to prepare for tactical signal interface; look at technical control tactical interface boxes or the CG Grid Net locations in Europe. Fixed signal is involved in wartime support as is tactical signal; consider how the logistics community plans for their spare parts replacements to support the warfighters. One is not better than the other - both are necessary.

And all across the spectrum, computers and the proper management of computer information add a new dimension to our service business. It is no longer sufficient to close our eyes hoping it will all go away because it won't. In fact, the computer and

information field is growing by leaps and bounds beyond what most people had imagined. Tactical and fixed signal planners must take into account the information mission area revolution and prepare for future growth.

The signal community is quite fragmented by commands, offices, institutes, laboratories, schools, and doctrine so sharing information is difficult. The problem has been greatly exacerbated by the IMA realignment and the incorporation of many new functions. People are helpful when called or written to, but there is no proactive agency responsible for insuring the signal community gets up-to-date information quickly. Those who want information are on their own to investigate where to find what they are seeking and then how to properly phrase their verbal or written request in order to get the correct response.

Fellow Army War College signal classmates serve to illustrate my point. Upon our arrival to Carlisle Barracks, those previously in tactical commands knew virtually nothing of the big changes coming about as a result of the information mission area

realignment and none of us were up-to-date on the status of MSE or SINCGARs. We were admittedly each in our own worlds caught-up in the day-to-day requirements of our previous jobs yet there was no downward dissemination of signal information to keep us informed of what our 'branches' were doing.

In a similar vein, some of us went through common-but-separate experiences in the field but there was no mechanism for the horizontal sharing of lessons learned and so we individually repeated mistakes others had made but that we didn't know about. An example concerns the telephone switch upgrades. Many battalions in 5th Signal Command in Germany as well as the 1st Signal Brigade in Korea were going through the same thing yet there was no forum for exchanging experiences to keep from repeating dumb mistakes. We could have saved much frustrating heartburn if we had discussed problems areas and how we resolved difficulties so fellow battalions would not suffer similar tribulations.

A professional journal could have been one means for providing

the necessary forum for exchanging ideas.

When the fielding of MSE begins, I strongly suggest a forum be established for battalion commanders and staffs to learn from each other, thereby ensuring better and better MSE fielding as the program progresses.

Some problems at the working levels are not easily resolved through current publications. Finding operators' manuals for the old D-200 telephone line trucks is a case in point. Despite numerous pleas for assistance to higher headquarters, the lower units continued to be 'pinged' for not having the manuals on-hand with the trucks. These type problems seem to grow in magnitude and to absorb a lot of valuable time and effort when there ought to be an avenue, such as a simple telephone call, to break the bureaucratic redtape and to reduce the problem back down to manageable proportions.

Yet another example of failing to disseminate information down to those who need it concerns the many data-gathering efforts

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underway in support of requirements studies for user computer architectures. There were often several teams in my battalion area of responsibility gathering user data for future signal services, involving either automation or communications or both, but we usually didn't know who was in the area or to which agency they were assigned, thereby reducing our ability to assist them or to answer questioning telephone calls from our user community Worse yet, the visiting data teams sometimes were in a military community without courtesy notification to the MILCOM commander or his staff. The servicing area signal battalion should have been informed as to the dates and purposes of the visiting data teams so as to help lay the groundwork, provide assistance, and answer user questions. Unfortunately, we often had to seek out from higher headquarters information on what was happening in V Corps that we should already have known about.

So, two important points. One, that the ambitious, motivated signal person must be the one to initiate a need for information and two, the person must, usually by trial and error, discover the right place to go to for the desired information. This method of

gaining needed information is time-consuming and very frustrating to those in the field. It is made particularly difficult if the person is overseas where telephone calls back to CONUS are greatly limited. **There is no rational reason why it should be so difficult to get straight answers to good questions.**

An enterprising signal officer at MILPERCEN Signal Branch used to send-out quarterly Signal Newsletters to battalion and brigade commanders in the field. The newsletters were received hungrily and distributed to all other officers in the unit. The news was timely and the information was useful. The newsletter has since been discontinued, probably do to the officer's reassignment, but the concept is still viable. The cost was not great and the returns in keeping officers abreast of current MILPERCEN happenings was significant

It must be recognized at the highest levels that more must be done to meet the increasingly difficult needs of the Army signal community, both tactical and fixed, communications and information, EAC and CAB, civilian as

**well as military, to pull everyone together into a cohesive
team imbued with confidence and understanding of where
they fit in the greater scheme of things and how their
small part contributes to the good of the whole.**

I propose first that the Director, Information Systems and C4 at
the Secretary of Army level direct a subordinate agency to act as
the focal point for Army-wide communications and information
matters. The subordinate agency would actually be the
communications and information systems 'branch' integrator for
the Army, acting as a lead office in a very active role that
performs a valuable integrating service for people involved in signal
and in making signal work. The integration agency would have
the appropriate authority and clout to take the lead, establish
direction, set things in motion and get the ball rolling to keep our
own signal personnel <u>informed</u>.

First, that agency would request authority to publish a
carefully-designed, regularly-distributed professional journal which

- ties-together the concepts of communications and information,

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now seemingly poles apart;

• offers short blivets on new technology, new techniques, newly acquired equipment, recently-let contracts or new, relevant doctrine;

• provides helpful hints on how to get things done;

• encourages an outlet for professionals to publish articles;

• keeps everyone up-to-date on latest key personnel changes or key legislation or pertinent regulation changes;

• publishes other important tidbits and telephone numbers when its been determined a certain type common, recurring deficiency exists but which can be solved by the appropriate dissemination of information.

• answers readers' questions, perhaps two or three per issue

Examples of topics appropriate for the journal might include what a fellow signal organization has done to tackle the problems of establishing an information center; status of MSE, IMA or SINCGARS; suggestions on how to form a steering community, particularly in a 'hostile' environment; what type training is necessary for MSE teams; how to assist users in defining their architecture requirements; how the Information Management Plan

(IMP) process works; how to easily buy small computers; or various methods for interfacing tactical signal with strategic systems. There is a crying need for a publication of this sort.

Second, the focal-point agency would offer an Autovon HOTLINE number for people in the field to call to help resolve problems or for quick ideas, points of contact, or references to seek-out solutions. (Easy-to-remember Autovon numbers might be; 221-COMM or 221-CCCC or 221-DISC. The 800-number system might produce more imaginative numbers.) An appropriately-staffed section with interested, energetic personnel desirous of helping people in the field to cut through the bureaucracy for simple answers would do wonders for morale and greatly help to alleviate field frustrations at not being able to find answers. Such a service would be particularly helpful during these times of broad change in our missions. Our customers are ever demanding of our services yet we cannot afford the luxury of saying we don't understand the system yet, please come back in another year or so. Our people in the field need answers now.

Third, the integration agency would recognize the need for all players and actors in the Army-wide signal community to know each other. As such, the agency would maintain, publish and disseminate a Points of Contact list or an Organization and Telephone Chart or something periodically updated as required that keeps everyone playing off the same sheet of music. As one oldtimer (who asked to remain unnamed) stated: "Its terribly difficult to get people coordinated when they aren't used to working together normally".

Fourth, the agency would be responsible for professional education and training seminars through any of several means by: periodically publishing lists of relevant correspondence courses from Army or other service or branch schools; directing Ft Gordon, Ft Huachuca or eliciting Defense Communications Agency personnel to publish pertinent articles to help shore-up discovered 'weak' areas; directing project managers to distribute to the field periodic 1-page advertisements or flyers that keep signal personnel informed as to the running status of their project; coordinating for short 1-, 2-, or 3-day mobile training teams to travel worldwide to train

regionally-organized groups of people in applicable communications

or information area subjects; directing the development of

videotapes for copying and easy distribution to the field either

directly to units or via the audio-visual outlets. The field

desperately needs information - an informed member of the

organization performs better than an uninformed person.

Fifth, the agency would be the sole office for maintaining a

current file of military studies or commercial contracts let for

consulting or studies services. In my numerous telephone calls to

the many individual offices within Ft Gordon Signal Center &

School, Ft Huachuca's US Army Information Systems Command,

the Training and Doctrine Command or within Forces Command, I

discovered several instances where different agencies let contracts

for a commercial firm to perform studies or gather data when

similar studies were already completed or were in process at the

same time. Twice, I found where a civilian contractor was

studying an issue that other Army officers were also studying,

although in different commands. These examples represent a

terrible waste of money and probably are just the tip of a very

deep iceberg. It is imperative, particularly in these days of tight

dollars and increasing sensitivity to fiscal responsibility, that

expensive, time-consuming studies be registered not for approval

but for documentation prior to being conducted. The high-level

integration agency would be the appropriate clearing house to

register communications-information studies in hopes of precluding

expensive duplication of efforts.

A problem arises as to the appropriate location for the

'integrating office'. The Training and Doctrine Command's (TRADOC)

Integrating Center is located at Ft Leavenworth, Kansas and is the

designated focal point for integrating training and doctrine efforts.

Ft Gordon Signal Center and School is the proponent for "all things

signal" and therefore is the Army's signal proponent, but the

historical understanding has been that Ft Gordon is responsible for

tactical signal at corps and below and that Ft Huachuca is

responsible for tactical signal at echelons above corps plus fixed,

sustaining base signal. Hence, we have by tradition the Army's

signal officer, a 2-star at Ft Gordon, and another (supporting?

competing?) signal 3-star at Ft Huachuca. Left hand, right hand

Fortunately, there is one more 3-star at DA level.

Given that the 'two branches of signal', tactical and fixed, must come together *conceptually* into one cohesive signal community, then the 64-million dollar question is Should the personnel assigned to the 2-star's integrating center have tasking authority over the 3-star's personnel? Or, should there be a separate higher level integrating office with clearer lines of responsibility over both agencies?

Perhaps the answer involves a combination of both. The TRADOC integrating center at Ft Leavenworth, Kansas, should continue to be the proponent for "all things signal", specifically doctrine and training in support of the TO&E Army. AR 10-41, US Army Training and Doctrine Command, gives Ft Gordon preparation responsibility for all signal doctrine for echelons above corps and below, - that includes both communications and automation/information doctrine - while AR 10-13, US Army Communications [Information Systems] Command, directs USACC [USAISC] as responsible "for other development activities".3 Ft

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Gordon must take the lead, however, as the Army's warfighting supporting unit, in those cases where tactical doctrine meets non-tactical doctrine. **The Army's number one priority 'to prepare for war' must take precedence over the pressing needs of the peacetime Army. In those few cases, it is imperative Ft Gordon, as TRADOC's signal representative, have tasking authority over Ft Huachuca for the preparation of relevant, current doctrine.**

Similarly, Ft Gordon retains responsibility for basic and advanced signal training for all people who wear signal insignia. Ft Huachuca maintains responsibility for specialized training, eg sustaining base computers systems operations, and civilian schools.

The other aspect of an integrating office is more difficult but no less important, that of bringing the two signal communities together into one cohesive community. I see this as less well-defined than TRADOC's official integrating center; thus, impetus must come from the highest levels of the Army, specifically from the office of the Director, Information Systems, Command, Control,

Communications and Computers. The specific integrating agency

may be delegated out of the office of the Secretary of the Army

but no lower than Department of the Army level, the ARSTAFF.

The more we understand what our users do, the better we can

provide them with quality communications and information

services. There is a tendency for some services people to wait for

the customer to come to them with very specific requests for

service. We hear a lot of this nowadays in terms of

'requirements'; "Tell me your requirements and I'll work hard to

satisfy them". Or, worse; "You never told me what you wanted

so how could I read your mind"? "Baloney!", I say. Such talk is

unprofessional, self-defeating and gets us nowhere. For a few

enlightened customers who may know how to state their

requirements in our terms, perhaps this type attitude will work.

But for the vast majority of the time, **we in the signal

community must extend ourselves to our customers.**

Our mutual goals should be to design human-compatible, 'user-

friendly' systems within allocated time and budget constraints. We

need to learn how to ask the right questions so as to receive useable answers that allow us to help our customers. We are the ones with the insight. We possess the technical proficiency. We are in the perfect position to ask the key questions that elicit helpful responses.

Ft Gordon and Ft Huachuca schools personnel should design into their curriculums short courses on basic communicative skills such as 'interview techniques' or 'group meetings' or 'how to ask the right question' as well as oral and written skills. Signal officers at all levels interact on almost a daily basis with their customers, and most particularly with the integration of Directors of Information Management, DOIM, functions. To be effective, DOIMs must be masterful at eliciting proper responses through personal contacts or via well-led meetings with the users. Signal personnel other than DOIMs are often the first to hear of an imaginative information system idea, and they must artfully gather more information so as to evaluate the concept and to best advise the user on how to proceed.

Similarly, we must be cognizant of how the Army works - what the basic organizational relationships are and how the fighters organize for war. It is not sufficient to isolate ourselves in a 'technological cocoon', emerging only when the outside voices become too demanding. We should know basic procedures: how a requisition gets back to the National Inventory Control Point from the field; who the Division Support Command (DISCOM) commander needs to talk to; how vital intelligence information gets to the maneuver battalion commanders; how ADA firing batteries get their target information; how a post or community tenant organization submits its Information Management Plan. Then and only then can we properly advise our customers.

I've seen too many times where signal personnel at very low echelons were tasked to go into a post or community to conduct studies of one sort or another, perhaps to gather data for a future communications system. As knowledge of the signal efforts bubbled upwards to the command level, user tempers flared because they had no knowledge of what was being done in their area of

responsibility. Or, put in other words, no one had the courtesy to inform the command levels as to what was happening. Another way of looking at it is that the signal community did not play the game right by not using the command chain to inform commanders *ahead of time* of studies which might affect their operations. Often, the commanders did not want the nitty gritty of what was being done - they just wanted to know in broad generalities who was asking questions 'on their turf', and in some cases, they wanted to insure the proper, knowledgeable person was assigned as the responsible community point of contact. **The signal community needs to learn to play the game better.** We would have made a much better impression by insuring the command chain was informed of coming data gathering teams and by distributing simple 'advertisements' or offering command briefings using professionally-designed slides

Signal people perform a valuable service. The people and organizations of the Army are our customers - they are the users of our service product. The outside commercial world recognizes the criticality of advertising their product not only to be sold as

widely as possible but also to be readily accepted by those who buy

it. Despite the fact the Army signal community is in a service

business, there is virtually no salesmanship or advertising of our

product. It is as if the Army were a captive customer who has no

choice but to use the Army's signal product. Unfortunately, we

pay the price in an uninformed user, a begrudging user, a confused

user, and sometimes a frustrated user. There has got to be a

better way.

In a cursory review of leading military magazines and journals,

I discovered not one article was written in all of 1986 by a signal

person in a journal with a known, specified non-signal readership,

such as the infantryman's Infantry magazine or the tanker's

Armor journal.4 Soldiers magazine, whose target audience is the

general enlisted soldier, featured the US Army Information Systems

Command on its' February 1987 front cover and with several

articles within its pages. But that is not the point My contention

has to do with our not selling a future signal system or not

explaining a difficult signal concept to hard-to-please users of our

product. When I hear non-signal people say; "I don't know

anything about MSE", I feel that the corporate we has failed Our

salesmanship has been poor and we had better be prepared to pay

the price in a transition and acceptance of MSE that is not as

smooth as it ought to.

In these times of confusion, as all of us attempt to find our

way through the information mission area haze, there ought to be

many articles in various Army publications to assist our users in

dealing with this new fuzzy concept.

Similarly, there ought to be simple, easy-to-understand articles

in the combat arms branch journals having to do with MSE,

SINCGARS, tactical computers, information area and other issues

which are happening today. However, there are none in the

magazines I checked for all of 1986. Some journals, in short

paragraph format, did have quick news releases about some new

piece of equipment, often prepared by Army Materiel Command,

but there was nothing which attempted to 'sell' or get across as a

'what we are doing for you' or 'how we can help you to fight

wars' gimmick anything having to do with a signal position By

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not selling our product, we are, unfortunately, putting ourselves in the position of selling ourselves short.

Even AUSA's Army Greenbook, 1986-1987 did not include signal or information as a separate category, either as the US Army Signal Corps or the US Army Information Systems Command or as a combination of both, though other branches were afforded their own special consideration. The only mention of signal items was in a section under AMC's CECOM (Army Materiel Command's Communications-Electronics Command) which dealt with new signal equipment under the umbrella of development and fielding. Again, the signal community lost a golden opportunity to advertise to a vast, interested audience.

Signal commanders and managers at all levels must realize the importance of salesmanship of their service product. Furthermore, any equipment or system fielding plan should include an aggressive customer awareness plan with professionally-prepared brochures, literature, news releases, or programs-of-instruction for unit or community

training classes. Too often, these valuable devices are left up to the lower echelons to prepare. Emphasis from the top and adequate preparation from higher-level headquarters staffs will help to insure a viable publicity campaign which should reap great dividends in a better-informed customer with better acceptance of 'our' system.

Additionally, there must be increased emphasis and encouragement for signal personnel to write papers for publication in other branch journals. We must start right now in assisting the combat users to understand MSE. We should begin with initial basic articles followed by progressively more detailed articles as MSE fielding approaches. Most importantly, we must not hide key facts or downplay critical issues. For example, if MSE won't interface with TRI-TAC upon initial fielding, then don't pretend that it does. Touting "The check is in the mail" is not sufficient. Our credibility is at stake. The Army is here to prepare to fight and we must be active proponents of how our signal systems assist the warfighters to do their jobs better, in peace or war

I suggest the Signal Center and School, perhaps the Communicator magazine, sponsor a writing contest for the best short, informative article on MSE for publication in an other-than-signal branch journal.

One of the best publications for keeping its people informed is the Army Logistician, ALOG. Almost every issue I reviewed contains some aspect of computers and information management systems and recent developments in new equipment. The articles are most often written by logistics personnel with excellent knowledge of their automated systems. The articles are informative, interesting, illuminating, easy-to-read and represent state-of-the-art concepts. We could learn from ALOG.

Signal doctrine is lagging. It appears the signal business has moved so rapidly that doctrine has been unable to keep pace with the many changes.

> Doctrine is indispensable to an Army . . . Doctrine
> provides a military organization with a common
> philosophy, a common language, a common purpose,
> and a unity of effort. 5

But difficult as it is, we very much need doctrine in the field as much for our own foundations as well as a basis for dialogue with our customers. At one time, signal commanders pointed to doctrinal literature to provide young signal officers a point of departure when contemplating signal issues. But there is very little now to fall back upon, particularly for sustaining base signal support systems and services. As such, we're often relegated to 'the squeaking wheel gets the grease' or muddling through the best we can with whatever seems right. Our tough customers are accustomed to dealing with doctrine and they understand and respond to doctrinal theory, so our attempts at 'doing the best we can' sometimes fall short in the face of demanding users. We haven't armed our young signal emissaries very well. We're letting them down.

Field Manual 100-5, *Operations*, is the Army's keystone warfighting manual and is the doctrinal basis for the AirLand Battle (ALB). The references in the back of FM 100-5 list sources of additional information pertinent to the ALB doctrine and three communications manuals are included: FM 11-50, *Combat*

Communications within the Division; FM 11-92, *Combat*

Communications within the Corps; and FM 24-1 *Combat*

Communications. All three manuals are pretty much out-of-date

with current equipment and interestingly, none of them consider

tactical communications as a subset of defense or national systems

or as a subset of any existing host-country systems, and none of

them discuss extending or interfacing tactical systems using the

Defense Communications System. It appears tactical systems are

treated as a unique feature irrespective of anything else.

Moving to echelons above corps (EAC) we find FM 100-16,

Support Operations: Echelons Above Corps. The list of references

in the back of FM 100-6 include the three FMs above as well as:

FM 11-23, *Theater Communications Command (Army)*, and FMs 11-

24 through 11-29 which cover the various type signal organizations

in theater. Unfortunately, FM 11-23 (TCC)A)) is woefully out-of-date

and is of absolutely no use whatsoever. [6]

Chapter 4 of FM 100-16 is titled "Communications and Air

Traffic Control" and it does address in-theater communications,

however so lightly:

> Existing in-theater communications, when available,
> will be used to the maximum extent possible to
> support wartime requirements and will be augmented
> in increments as new US units deploy to the theater.
> The system must be capable of being expanded and
> reconfigured with tactical, transportable equipment to
> meet changing geographic areas and unit densities.

Reference is then made to the outdated FM 11-23 (TCC(A))

followed by: "The area [EAC] nodal system links with the

worldwide DCS through a minimum of two EAC DCS access points".

Two pages later in a final reference to fixed, non-tactical

communications, we have:

> In an established combined operations theater, there
> is an existing HN [host nation] communications
> infrastructure, both military and civilian, that may
> be used to augment US communications support to
> the Army, joint, and combined forces in both war
> and peace. The use of such systems is particularly
> important to support the communications requirements
> of initially deploying forces as well as to sustain operations
> throughout the theater.

It is readily obvious FM 100-16 is written from the point of

view of the EAC (signal) unit and not for the fixed, sustaining base

ISC unit.

Field Circular 100-16-1, *Theater Army, Army Group, and Field Army Operations*, describes command and control relationships at echelons above corps and presupposes a working knowledge of FM 100-16. FC 100-16-1 goes into a little more detail the mission of the Theater Communications Commander (Army) but mostly with one key sentence: "It [the theater communications system] may also interface with other combined communications systems and local telephone and telegraph systems, in accordance with standardization and host nation support (HN) arrangements." Again, there is meager information to provide an ISC commander for signal doctrine for sustaining base signal organizations.

A perusal of all available applicable Army publications (Army regulations, field manuals, field circulars, or DA pamphlets) results in no manuals for ISC fixed-unit operations. There is no doctrinal assistance for ISC fixed-unit personnel.

Most literature, most emphasis, most manifestation of interest

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is for tactical signal. Thus, the person with an only-tactical signal background who enters the fixed arena for the first time suffers culture shock. There are plenty of rules and regulations in fixed signal, but little guiding doctrine. **The lack of appropriate doctrine for EAC and sustaining base signal support is a longterm deficiency which needs correcting.** There is sufficient experience base in both areas for appropriate doctrine to be written.

The Director, Information Systems, Command, Control, Communications and Computers must direct subordinate headquarters agencies to write doctrine appropriate to their assigned portion of signal support. There should be achievable - but firm - deadlines for the final drafts and final products. TRADOC Pam 310-6, "Army Doctrinal and Training Literature (ADTL): Development and Preparation, directs its integrating centers to task associated schools for doctrinal update and to "prepare publications when subject matter crosses functional areas". TRADOC's role in mediating the longlasting disputes between the two signal corps must become more forceful.

Furthermore, the CG, TRADOC must ensure that **signal doctrine precedes deployment of MSE in 1988.** Otherwise, as we have learned once before with the SGT York gun, the cart departs before the horse. Doctrine should not be written 'on the fly' as the system is being fielded and operationally tested.

We signal people are doing 'OK', but 'OK', like 'adequate', is not good enough. For some reason, **our worst failings seem to be in taking care of ourselves.** For example, despite the fact the TO&E Army has computers down to the company level, units within the Information Systems Command do not. In fact, ISC signal battalions continue to use manual property books, an outmoded, tedious, inefficient way of doing things the TO&E Army would not tolerate. But we persist in shooting ourselves in the foot. We don't set a very good example on how to do business when our customers have better systems than we do. We lose credibility.

Salesmanship and demonstrating-by-example. We can do

neither very well until we are knowledgeable and show-by-actions the power of our words. But we cannot remain knowledgeable nor can we prove the worth of fancy new, high-tech systems without aggressive in-house programs to keep our people informed and to provide them with up-to-date systems.

A current directive within Information Systems Command is to establish post or community 'information resource centers', places where prospective customers can visit to observe or try-out various types computers and software. What better place to talk to users without computer experience than within the offices of their post or community supporting signal unit! Then two important things will have been accomplished at one time; an active, real-life computer-using office would superbly complement the see-for-yourself objectives of the ISC information center while simultaneously serving the very real needs of the demonstrating signal organization. The members of the signal organization then would become the walking-talking proponents for automating various functions.

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We cannot continue to 'be all things to all people'; there is a limit to our people and time resources. It makes no sense at all to not work hard to keep our own people informed and to provide our own people with automated systems similar to what our customers are getting.

We signal people are doing our jobs but we continue to be at odds with one another. It is past time to 'git all our hosses pullin in their traces in the same direction'. Dissension divides – it detracts from the overall effort. We have the potential for reaping the rewards of a synergistic effort where our US Army customers as well as ourselves are the lucky beneficiaries. But it requires a change in attitudes starting at the very top and promulgating downwards just a few levels. We need to help ourselves, thereby making us better emissaries for the signal community. As better ambassadors, we better sell our services products and by doing a better job at selling our products, we produce a happier clientele. Satisfying the customer is a lot of what our job is all about.

In summary, my proposals are:

1. Ft Gordon-Ft Huachuca embark on a joint venture to develop and publish a <u>Handbook of Signal Terms, Systems and Equipment</u>.

2. A lessons-learned forum be created to support MSE fielding.

3. A high-level office be created by Director, Information Systems, Command, Control, Communications and Computers to act as a 'branch integration' agency for signal matters to accomplish the following:

    a. publish an across-the-spectrum professional journal.
    b. establish an AUTOVON Hotline.
    c. maintain and disseminate a signal points-of-contact list
    d. coordinate for education and training seminars.
    e. serve as the 'studies' clearing house.

4. The signal community learn to play the Army's game.

5. *We* extend ourselves to *them*.

6. Signal curriculums be stretched a little more to include interpersonal and group communicative skills.

7 The Signal Center & School sponsor a writing contest for an MSE article to be published in an other-than-signal publication.

8. Signal 'salesmanship' be pushed.

9. Doctrine be brought up-to-date, particularly in the Information Systems Command arena.

10. Doctrine be written before the fielding of MSE in 1988.

11. The signal community set-the-example for the use of information and automation services, specifically Information Systems Command units, by equipping themselves with automated systems.

ENDNOTES

1. These terms are expanded as follows.

ACCS - Army Command and Control System
AC^{2}MP - Army Command and Control Master Plan
VIABLE - Vertical Integration of Army BaseLine
ASIMS - Army Standard Information Management
      System
STARNET - Standard Army Network
SIGMA STAR - Concept for the integration of battlefield
      functional areas: command and control,
      intelligence, fire support, combat support, ADA
TRI-TAC - Joint Tactical Systems of the three services -
      hence, TRI-TAC.
MSE - Mobile Subscriber Equipment
SINCGARs - Single Channel Air-Ground Radio
PLRS - Position Locating and Reporting System
TACCS - Tactical Army Computer and Communications
      System
ULCS - Unit Level Computer System
bit - smallest recordable unit of information, a binary
      digit
byte - a group of bits which represent a character
packet - a group of bytes which are treated as a unit in
      a communications system
AM - amplitude modulated
FM - frequency modulated
HF - high frequency
UHF - ultra high frequency
SHF - super high frequency
Hz - Hertz
MHz - megahertz
GHz - gigahertz
DCA - Defense Communications Agency
DCS - Defense Communications System

ACSIM - Assistant Chief of Staff for Information
Management
DISC4 - Director, Information Systems, Command,
Control, Communications and Computers
BCR-I - Battlefield Communications Review - I
BCR-II - Battlefield Communications Review - II
BAIR - Battlefield Automation Integration Review
C2SPR-I and -II - Command and Control Systems
Progress Review - I and - II
Tier-I - Refers to major Army computer sustems, the big
crunchers.
Tier-II - intermediate size, sustaining base systems
usually located at garrison or military
community levels.
Tier-III - personal and small office computers.

2 John Marston, "Hallmarks of a Profession", Public Relations
Journal, July 1968 and published in US Army War College
publication, Pre-Course Background Readings for Military
Professionalism, Carlisle Barracks, Pa, 15 April 1985

3 "Other development activities" is defined in para 3c of AR
10-13 as "doctrinal, organizational, and materiel systems
requirements not included in the definition of combat
developments". Para 3c continues: "CG USACC [USAISC] will report
directly to HQDA. USACC [USAISC] will coordinate all other
development products affecting combat developments and
supporting training developments with TRADOC".

4 Army magazines reviewed for 1986 include:

Armor, The Magazine of Mobile Warfare, a bi-monthly
publication of the US Army Armor Center, Ft Knox, KY.
Army, published monthly by the Association of the US
Army, Arlington, VA.
Infantry, A Professional Journal for the Combined Arms
Team, published bi-monthly by the US Army Infantry School, Ft
Benning, GA.

Military Review, the Professional Journal of the US
Army, published by the US Command & General Staff College, Ft
Leavenworth, KS.

translog, The Journal of Military Transportation
Management, published monthly by Military Traffic Management
Command, Falls Church, VA.
Parameters, Journal of the US Army War College,
published quarterly by the US Army War College, Carlisle Barracks,
PA
Soldiers, The Official US Army Magazine, published
monthly under the supervision of the Army Chief of Public Affairs
at Alexandria, VA
ALOG, published bi-monthly at US Army Logistics
Management Center, Ft Lee, VA
Army Trainer, official DA publication published quarterly
under supervision of Cdr, TRADOC at the Army Training Support
Center, Ft Eustis, VA

6 The corps and below Field Manuals in question are the
following

a FM 24-1, Combat Communications, dated 11 Sep 85
b FM 11-50, Communications within the Corps, dated 31
Mar 77
c FM 11-92, Communications within the Division, dated
1 Nov 78

At echelons above corps, we find

a FMs 11-24 through 11-29, oldest one is dated 15 Sep
85
b FM 11-23 Theater Communications Command (Army),
dated 28 Nov 72

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2. US Department of the Army, <u>Army Regulation 10-41</u>: US Army Training and Doctrine Command, 1 Feb 82.

3. US Department of the Army, <u>Field Circular 100-16-1</u>: Theater Army, Army Group, and Field Army Operations, 18 December 1984. (hereafter referred to as FC 100-16-1).

4. US Department of the Army, <u>Field Manual 11-23</u>: Theater Communications Command (Army), 28 Nov 72. (hereafter referred to as FM 11-23).

5. US Department of the Army, <u>Field Manual 11-24</u>: Headquarters and Headquarters Company, TACC, 30 Sep 85.

6. US Department of the Army, <u>Field Manual 11-25</u>: Signal Troposcatter Company, Light and Heavy, 15 Oct 85.

7. US Department of the Army, <u>Field Manual 11-26</u>: Signal Large Headquarters Operations Company, 30 Dec 85.

8. US Department of the Army, <u>Field Manual 11-27</u>: Signal Cable Construction Battalion, 15 Oct 85.

9. US Department of the Army, <u>Field Manual 11-28</u>: Signal Long Lines Company, 15 Oct 85.

10. US Department of the Army, <u>Field Manual 11-29</u>: Signal Radio Operations Company; Signal Messenger Company, 1 Aug 86.

11. US Department of the Army, <u>Field Manual 11-50</u>: Combat Communications within the Division, 31 Mar 77. (hereafter referred to as FM 11-50).

12. US Department of the Army, <u>Field Manual 11-92</u>: Combat Communications within the Corps, 1 Nov 78. (hereafter referred to as FM 11-92)

13. US Department of the Army, <u>Field Manual 24-1</u>: Combat Communications, 11 Sep 85. (hereafter referred to as FM 24-1).

14. US Department of the Army, <u>Field Manual 100-5</u>: Operations, May 1986. (hereafter referred to a FM 100-5).

15. US Department of the Army, <u>Field Manual 100-16</u>: Support Operations: Echelons Above Corps, April 1985. (hereafter referred to as FM 100-16).

16. <u>TRADOC Pamphlet 310-6</u>: Armywide Doctrinal and Training Literature (ADTL): Development and Preparation, 1 Feb 85.

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